

Amendments to Specification

Please replace paragraphs [36]-[39], with the following amended paragraphs:

[0036] Still referring to Figures 5a and 5b, the pressure controller body 200 has a cylindrical chamber 210 formed therein for accommodating pressure sensing and controlling devices 280 (shown in Figure 2a and 2b). Preferably, a reduced diameter portion 211 is formed in the chamber 210, thereby defining an annular shoulder 212. A plurality of mounting holes 213 may be provided on the shoulder 212 or radially inner extensions thereof, for mounting pressure controlling devices. The chamber 210 extends downwardly towards the flange 240. An end wall 214 having a certain thickness is provided at a position adjacent to and spaced from the flange 240. A recess 260 is thus formed in the central portion of the flange 240. The recess 260 has a limited depth and shares the end wall 214 with the chamber 210. A through hole 215 is provided in the center of the end wall 214 fluidly connecting the recess 260 with the chamber 210. A reference gas inlet 270 is provided around the side wall of the pressure controller body 200 at axial positions corresponding to that of the end wall 214. The gas inlet 270 extends radially inwardly within the end wall 214 to a certain depth. A plurality of through holes 216 are provided in the end wall 214. The through holes 216 are in fluid communication with the gas inlet 270.

[0037] As can be best seen in Figure 2a, a gas dome 450 is mounted inside the chamber 210 on the end wall 214, closing the through hole 215251 on one side. The gas dome has a generally cylindrical portion and a flange portion 451 on the lower end of the cylindrical portion. A gas inlet valve 440 and a gas outlet valve 460 are mounted on the flange portion 451. A plurality of holes (not shown) are provided on the flange portion 451. Some of the holes fluidly communicate between through holes 216 and the inlet (not shown) of the gas inlet valve 440, while the others fluidly communicate between the outlet (not shown) of the gas inlet valve 440 and the gas dome 450. Therefore, reference

gas enters the pressure controller body 200 through the gas inlet 270 and flow along through holes 216, through holes on the flange 451. From here, the gas flows through the gas inlet valve 440 into the gas dome 450 which in turn communicates with the recess 260 via the through hole 215. Therefore, the gas flows to the recess 260 and applies reference pressure on one side of the diaphragm 180.

[0038] A reference gas outlet is also provided on the side wall of the pressure controller body. Particularly, since in this embodiment, the outlet is not in the same cross section as the inlet 270, it is not shown in Figure 2a. However, it is to be understood that similar arrangement of flow path is provided between the gas dome 450 and the gas outlet. Pressure controlling devices 280 are disposed above the gas dome and control the gas inlet valve 440 and gas outlet valve 460 to adjust the reference gas pressure supplied to the gas dome 450. In addition, at least one port (not shown) for wires of the pressure controlling devices is provided on the side wall of the pressure control body 200. The pressure controlling devices 280 are in electronic communication with a processor, such as a computer 400 to transfer signals to and receive commands from the computer 400.

[0039] Referring now to Figure 2a and 2b, the open end of the chamber 210 of the pressure controller body 200 is closed by a cap 201. In operation, the pressure controller body 200 is mounted on top of the pressure regulator body 330 with the flexible diaphragm 180 being clamped between the flange 240 of the pressure controller body 200 and the flange 340 of the pressure regulator body 330. The gas inlet 270 is then in fluid communication with an external reference gas source (not shown) with a known reference pressure, and the interior of the gas dome 450 and the recess 260 form a second chamber, whose internal reference gas pressure is applied to the diaphragm 180. Therefore, the diaphragm 180 is subjected to a controlled pressure on the pressure controller side.

Please add the following new paragraph after paragraph [43]:

[0044] It will be understood that the pressure regulator body 330 provides a first housing for the fluid whose flow is to be regulated, i.e. a first fluid. Correspondingly, the pressure controller body 200 provides a second housing, the recess 260 of which at least partially defines the second chamber. The upper part of the pressure controller body 200 forms another chamber.